Fig. 1

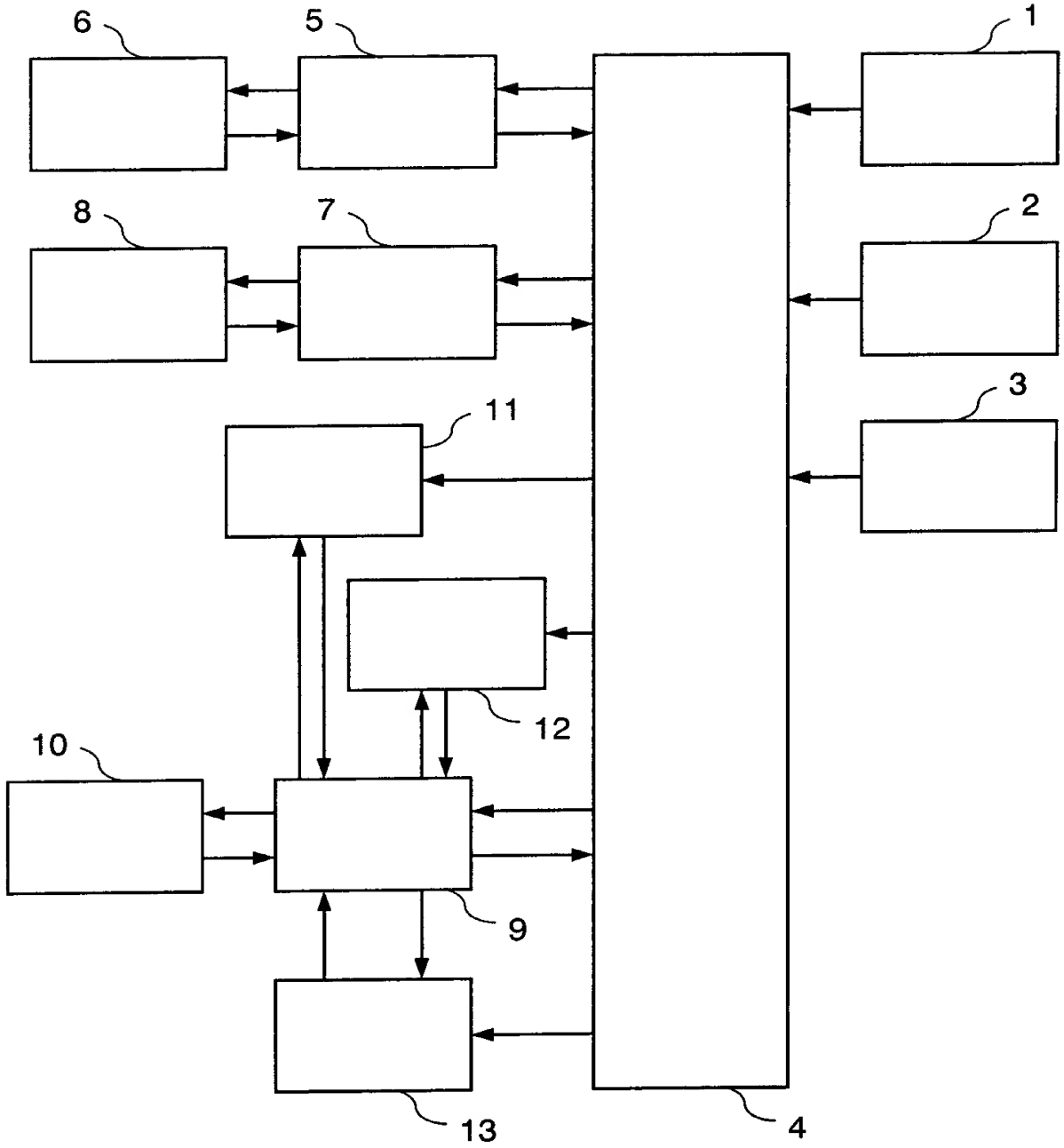


Fig. 2A

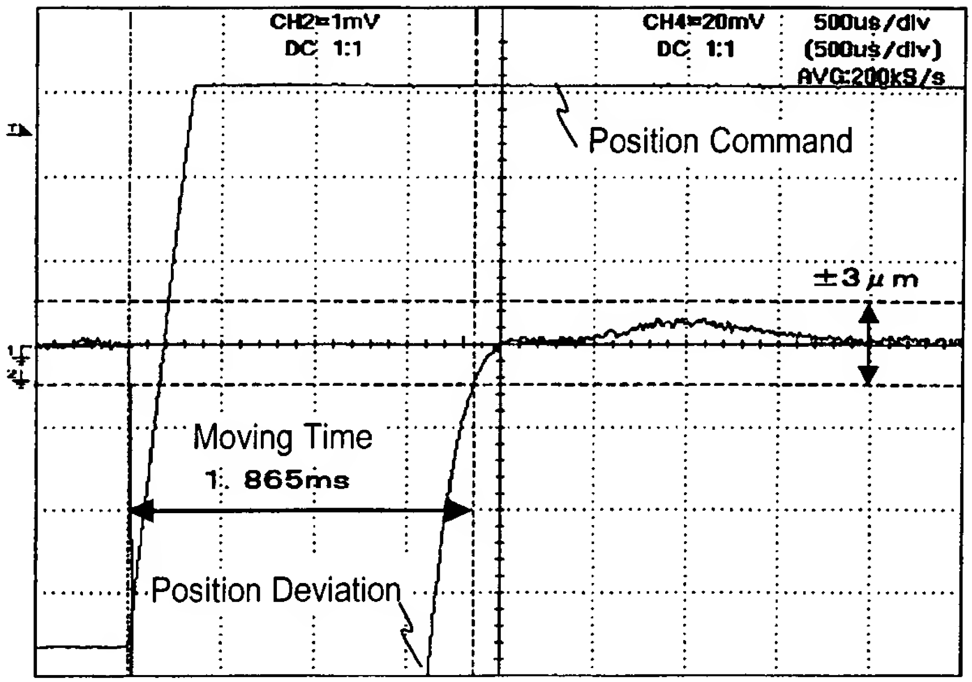


Fig. 2B

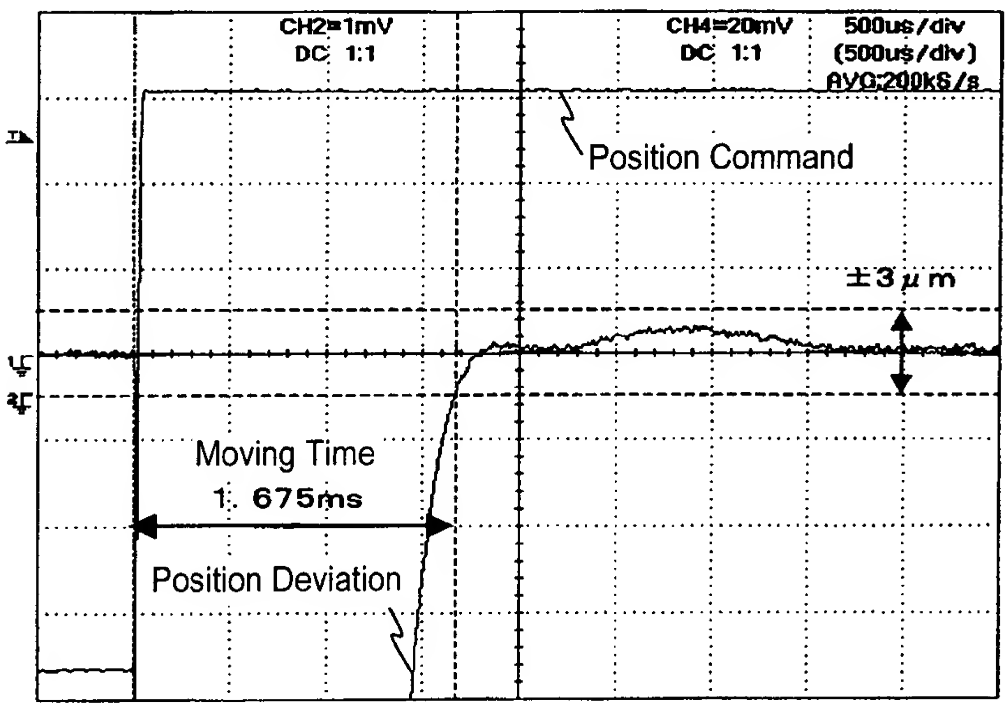


Fig. 3A

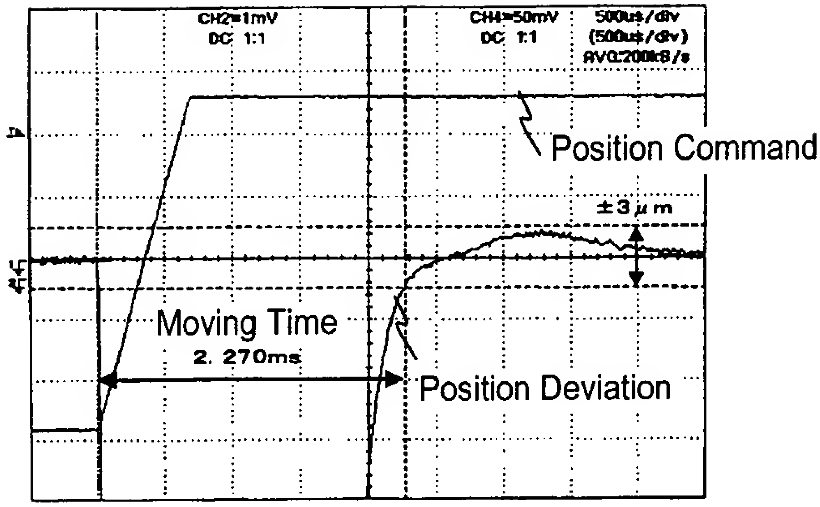


Fig. 3B

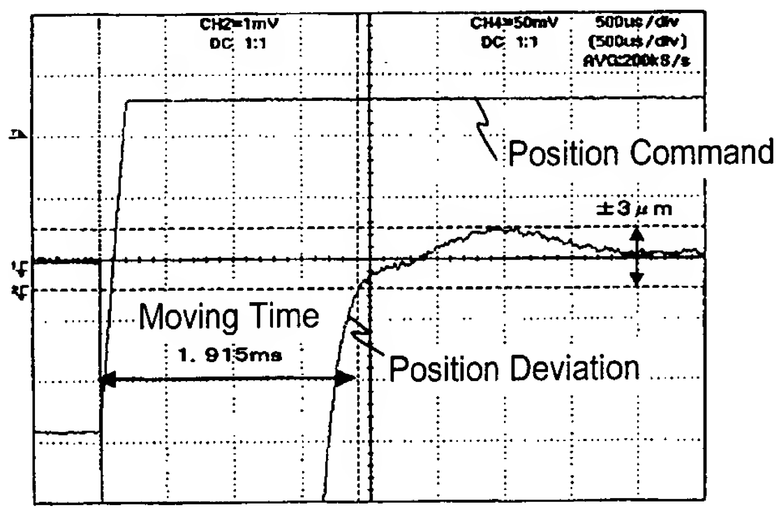


Fig. 3C

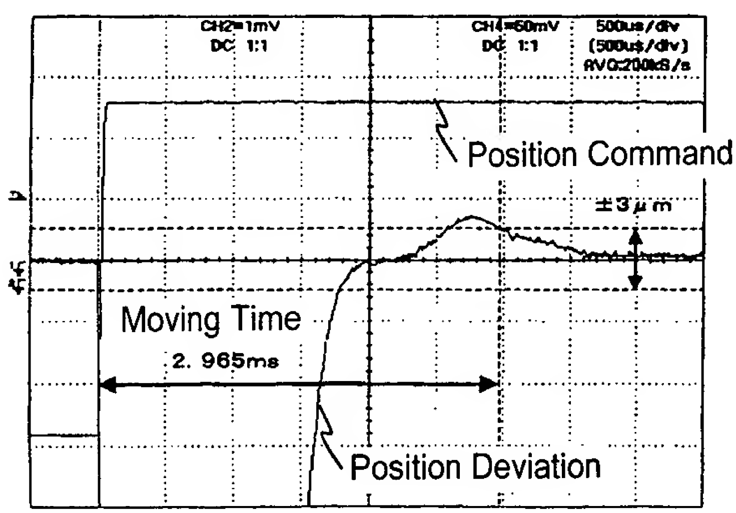


Fig. 4A

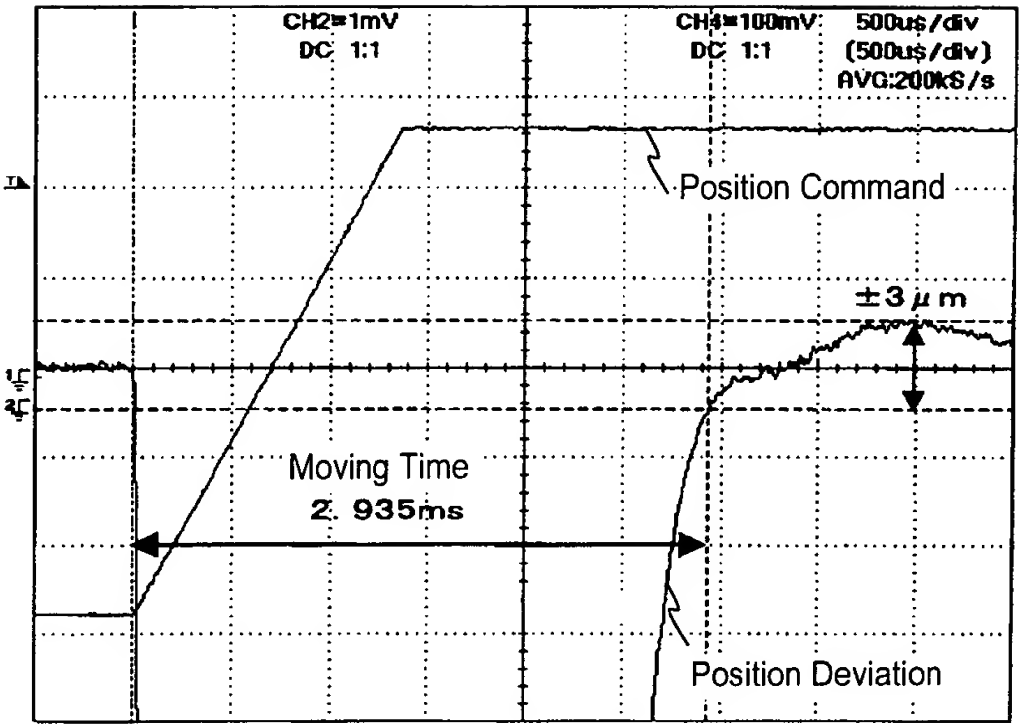


Fig. 5A

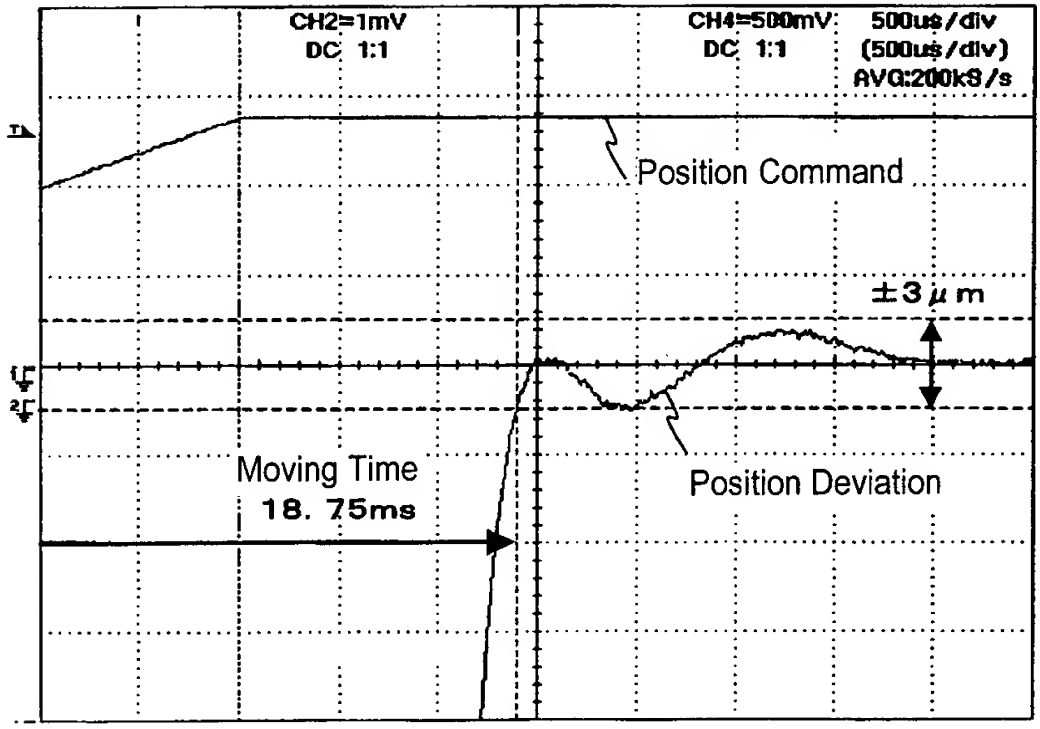

CH2=1mV
DC 1:1
CH4=500mV
DC 1:1
500us/div
(500us/div)
AVG:200kS/s
Position Command
±3μm
Moving Time
18.75ms
Position Deviation

Fig. 5B

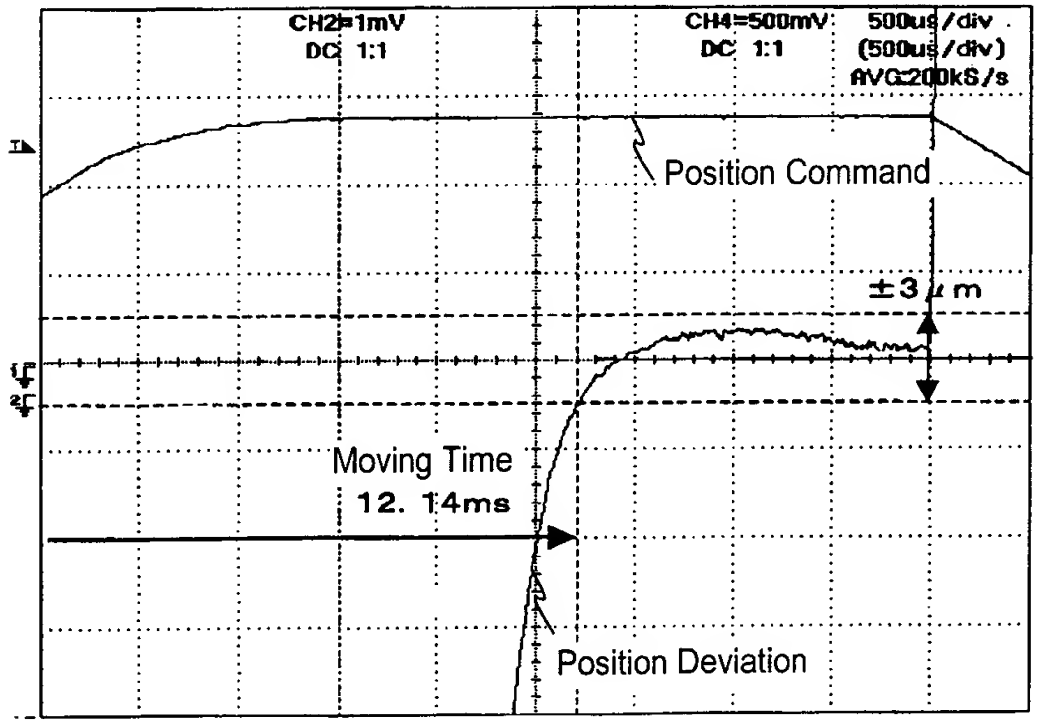

CH2=1mV
DC 1:1
CH4=500mV
DC 1:1
500us/div
(500us/div)
AVG:200kS/s
Position Command
±3μm
Moving Time
12.14ms
Position Deviation

Fig. 6

Moving Distance (mm)	Control Method
0.001 – 1.499	Step Position Command Control Method
1.500 – 4.999	Step Speed Command Control Method
5.000 – 50.000	Trapezoid Speed Command Control Method

Fig. 7

Moving Distance (mm)	Value of Speed Command (mm/ms)
1.500 – 2.999	10
3.000 – 4.999	2.9

Fig. 8

Moving Distance (mm)	Waiting Time for Settling (ms)
0.001 – 1.499	1.720
1.500 – 2.999	1.780
3.000 – 4.999	1.600
5.000 – 50.000	1.240

Fig. 9

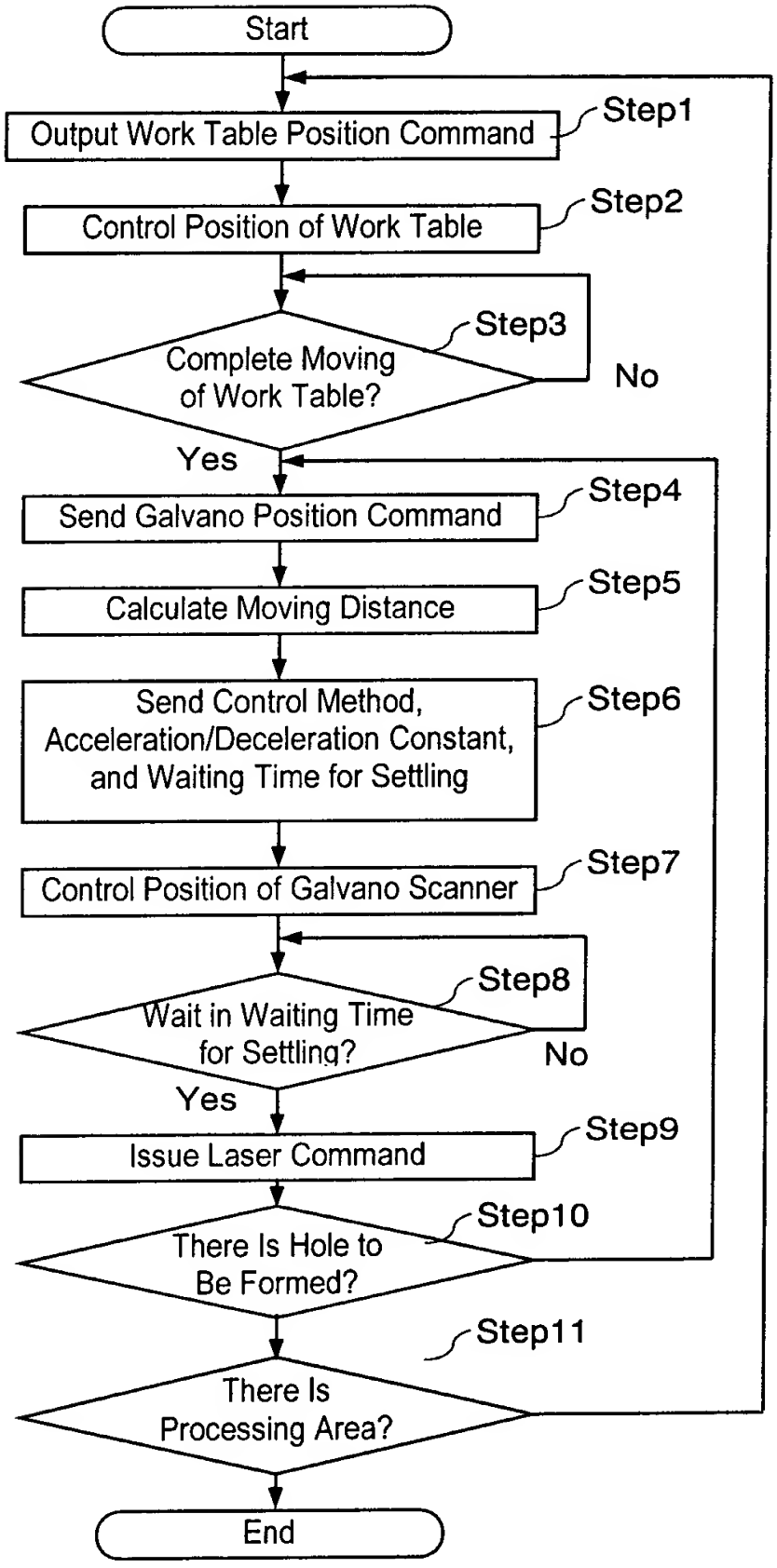
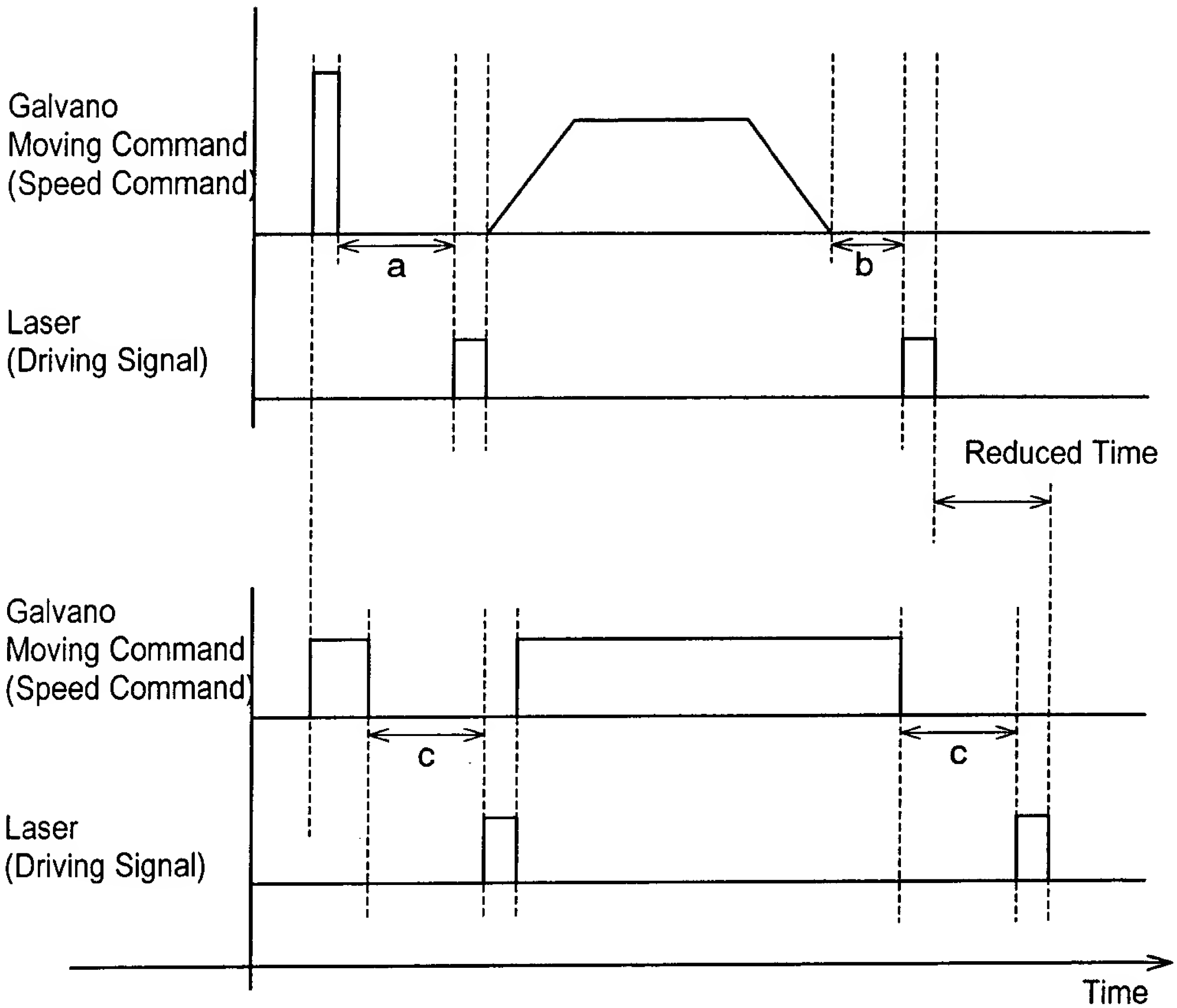

Start
Output Work Table Position Command
Step1
Control Position of Work Table
Step2
Complete Moving of Work Table?
Step3
No
Yes
Send Galvano Position Command
Step4
Calculate Moving Distance
Step5
Send Control Method, Acceleration/Deceleration Constant, and Waiting Time for Settling
Step6
Control Position of Galvano Scanner
Step7
Wait in Waiting Time for Settling?
Step8
No
Yes
Issue Laser Command
Step9
There Is Hole to Be Formed?
Step10
There Is Processing Area?
Step11
End

Fig. 10



a: Waiting Time for Settling Corresponding to Moving Distance of 2mm According to Embodiment

b: Waiting Time for Settling Corresponding to Moving Distance of 50mm According to Embodiment

c: Waiting Time for Settling in Conventional Processing Apparatus

Fig. 11

Moving Distance (mm)	Moving Time According to Embodiment (ms)	Moving Time of Conventional Apparatus (ms)	Ratio of Speed (%)
1.000	1.720	1.945	113
2.000	1.980	2.290	116
4.000	2.980	2.980	100
50.000	12.180	18.840	155

Fig. 12